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nd 356/400	Focusing method, position-measuring method, exposure method, method for producing device, and exposure apparatus		20030515	US 20030090661 A1			17
356/614	Focus masking structures, focus patterns and measurements thereof		20030522	US 20030095267 A1		⊠	16
438/14	Method for improving substrate alignment		20030605	US 20030104640 A1		Ø	15
716/19	Method and system for optical proximity correction		20030619	US 20030115569 A1		⊠	14
382/145	Pattern forming method		20031009	US 20030190070 A1		⊠	13
	Method and apparatus for self-referenced projection lens distortion mapping		20031030	US 20030202174 A1			12
382/145	Overlay metrology and control method		20031204	US 20030223630 A1		⊠	11
uit 716/5	Characterization and verification for integrated circuit designs		20031225	US 20030237064 A1		×	10
19 355/55	System and method for automated focus measuring of a lithography tool		20040101	US 20040001192 A1			9
^{ng} 219/121.83	Method and system for calibrating a laser processing system and laser marking system utilizing same		20040219	US 20040031779 A1			8
355/53	Programmable photolithographic mask system and method		20040318	US 20040051855 A1		⊠	7
em ces 219/121.69	High speed, laser-based marking method and system for producing machine readable marks on workpieces and semiconductor devices with reduced subsurface damage produced thereby		20040401	US 20040060910 A1		×	6
438/16	Method for aligning and exposing a semiconductor wafer		20040429	US 20040082085 A1		\boxtimes	-51
SS 702/94	AUTOMATIC CALIBRATION OF A MASKING PROCESS SIMULATOR		20040527	US 20040102912 A1		⊠	4
355/52		22	20040610	US 20040109148 A1			ω
355/67	Exposure apparatus, exposure method using the same, and method of manufacture of circuit device		20040617	US 20040114121 A1			2
356/124	Test pattern, inspection method, and device manufacturing method	10	20040617	US 20040114132 A1			Н
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									Mieher, Walter Dean et al.			16
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									Ikeuchi, Atsuhiko		716/21	14
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									Adel, Michael et al.			11
	•								White, David et al.		716/19	10
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									Cahill, Steven P. et al.		347/224; 700/166	8
									Cooper, Gregory D. et al.			7
									Schramm, Rainer		219/121.83	6
									Rossiger, Martin et al.			5
									Ivanovic, Lav et al.			4
	US 20040109148								Shima, Shinichi		355/53; 355/67; 355/71	ω
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Cooper, Gregory D. et al.	Nakasuji, Mamoru et al.	Nakasuji, Mamoru et al.	Nakasuji, Mamoru et al.	Hahmann, Peter et al.	Smith, Adlai et al.	Smith, Adlai et al.	Smith, Adlai et al.	Nakasuji, Mamoru et al.	Kimba, Toshifumi et al.	Cooper, Gregory D. et al.	Chien, Chen-Fu et al.	Nishi, Kenji	Inventor
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20030930	20031021	20040106	20040302	20040302	20040316	20040406	20040427	20040511	20040518	20011101	20011108	20011122	20011129	Issue Date
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Photomask and projection exposure apparatus	Method for exposing a layout comprising multiple layers on a wafer	Method and apparatus for the production of process sensitive lithographic features	Reference wafer and process for manufacturing same 430/22	Methods and systems for controlling critical dimension 378/34 (CD) error	Wafer alignment system	Method for improving substrate alignment	nd projection	Method and apparatus for self-referenced wafer stage 356/401 positional error mapping	Method for evaluating lithography system and method 430/30 for adjusting substrate-processing apparatus	re pattern onto one	Method for evaluating lithography system, method for adjusting substrate-processing apparatus, lithography 430/30 system, and exposure apparatus	Exposure apparatus, exposure method using the same, and method of manufacture of circuit device	Divided reticles for charged-particle-beam microlithography apparatus, and methods for using same	Title
430/30	430/22	438/14	430/22	378/34	702/95	438/14	355/53	356/401	430/30	430/201	430/30	355/67	430/5	Current OR

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430/311;	430/296; 430/30; 430/312; 430/328; 430/942	438/15	430/30	382/145			355/67; 355/72				355/18	355/53; 355/55; 355/68; 355/69; 355/71; 355/77	250/492.2; 250/492.3; 430/296; 430/942	Current XRef
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	Hahmann, Peter et al.	Bendik, Joseph J. et al.	Smith, Adlai et al.	Pellegrini, Joseph et al.	Laursen, James W. et al.	Ziger, David H.	Nishi, Kenji	Smith, Adlai et al.	Imai, Yuji	Buschbeck, Herbert et al.	Imai, Yuji	Nishi, Kenji et al.	Fujiwara, Tomoharu et al.	Inventor
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20010918	20011120	20020319	20020702	20021112	20021231	20030422	20030513	20030603	20030729	20030805	Issue Date
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Methods for transferring a two-dimensional programmable exposure pattern for photolithography 430/5	Magnification and rotation calibration patterns for particle beam projection system	Exposure apparatus, method for producing the same, and exposure method	Exposure apparatus, exposure method using the same and method of manufacture of circuit device	Photolithographic system for exposing a wafer using ਕੋ 355/53 programmable mask	Method of averaging focus through scattered energy determination	Photolithographic system including light filter that compensates for lens error		Method and apparatus for self-referenced projection lens distortion mapping		Monitoring apparatus and method particularly useful in photolithographically processing substrates	Title
430/5	250/252.1	355/53	355/69	355/53	430/30	355/67	438/14	356/124	355/53	355/27	Current OR

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46	356/237.4; 356/237.5; 356/388; 356/630; 356/632; 396/611		Finarov, Moshe									
47			Cooper, Gregory D. et al.									
48	356/401; 430/22		Smith, Adlai et al.									
49			Minvielle, Anna et al.									
50	355/71		Wristers, Derick J. et al.									
51			Adams, Thomas Evans									
52	250/492.2; 250/492.22; 355/27; 355/38; 355/40; 355/72; 358/487; 358/506; 430/5		Cooper, Gregory D. et al.									
53	355/30; 355/53		Nishi, Kenji et al.									
54	250/216; 250/492.2; 250/548; 355/30; 355/55; 355/57; 355/60; 355/67; 355/77; 355/77; 359/512		Ota, Kazuya								·	
55	250/491.1; 250/492.2		Enichen, William Albert									
56			Cooper, Gregory D. et al.									

356/401	Sub-micron through-the-lens positioning utilizing out of phase segmented gratings		19970121	US 5596413 A		☒	71
702/85	Method and reference standards for measuring overlay in multilayer structures, and for calibrating imaging equipment as used in semiconductor manufacturing		19970401	US 5617340 A		⊠	70
438/61	Method for continuously making a semiconductor device		19980519	US 5753531 A		\boxtimes	69
355/53	Projection exposure apparatus and projection exposure method		19990928	US 5959721 A		Ø	88
430/30	Lithography tool adjustment utilizing latent imagery		19991019	US 5968693 A		☒	67
430/30	Lithography tool adjustment and semiconductor integrated circuit fabrication utilizing latent imagery		19991109	US 5981119 A		\boxtimes	66
430/30	Method of characterizing linewidth errors in a scanning lithography system		19991116	US 5985498 A		☒	65
430/22	Pattern forming method using alignment from latent image or base pattern on substrate		19991123	US 5989759 A		\boxtimes	2
430/30	Method of adjusting lithography tool through scattered energy measurement		19991123	US 5989764 A		⊠	63
118/719	Apparatus for making a semiconductor device in a continuous manner		20000201	US 6019850 A		⊠	62
355/53	Projection exposure apparatus having a filter arranged in its projection optical system and method for protecting circuit patterns		20000912	US 6118516 A		×	61
355/67	Microlens scanner for microlithography and wide-field confocal microscopy		20001017	US 6133986 A		\boxtimes	60
250/492.2	Pattem forming method		20001114	US 6147355 A		Ø	59
355/27	Monitoring apparatus and method particularly useful in photolithographically processing substrates		20001226	US 6166801 A		\boxtimes	58
430/30	Charged-particle-beam microlithography apparatus and methods including focal-point correction		20010821	US 6277531 B1		Ø	57
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58	382/145; 396/611; 414/935		Dishon, Giora et al.									
59	250/491.1		Ando, Atsushi et al.									
60	355/43; 355/77		Johnson, Kenneth C.									П
61	356/401		Irie, Nobuyuki et al.									
62	118/300; 118/725; 118/725; 156/345.31; 250/492.21; 430/942; 432/55		frey, Jeffrey									
63			Adams, Thomas Evans									
2	430/296; 430/30; 430/942		Ando, Atsushi et al.									
65			Levinson, Harry et al.									
66	430/22; 430/311		Adams, Thomas Evans									П
67			Adams, Thomas Evans									П
68	355/67; 355/71		Nishi, Kenji									П
69	438/484; 438/62; 438/907		Frey, Jeffrey									
70			Cresswell, Michael W. et al.									П
71	250/548		Stanton, Stuart et al.									П

348/130; 83 356/237.5; 382/199	İ	82	348/126; 81 382/192; 382/220	250/491.1, 250/492.1; 250/492.1; 414/354; 80 414/384; 414/754; 414/784; 414/936	79 345/965	78 356/121	250/548; 356/400; 77 356/401; 356/500	76 356/513	356/302; 75 430/311; 430/394	74	118/718; 118/719; 438/484; 438/490; 73 438/676; 438/707; 438/907; 438/980	72 347/255	Ω
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	Manns, William G. et al.	Manns, William G. et al.	Carucci, Lori A. et al.	Kobayashi, Isao et al.	Manns, William G. et al.	MacDonald, Bruce G. et al.	Tanimoto, Akikazu et al.	Ledger, Anthony M.	Adams, Thomas E.	Hibbs, Michael S. et al.	Frey, Jeffrey	Porter, Vernon R. et al.	Inventor
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88	348/126; 382/201		Norwood, David A. et al.								
89	356/237.5; 382/303		Manns, William G. et al.								
90	382/218		Manns, William G. et al.								
91	356/400; 382/294		Manns, William G. et al.								
92	356/123		Brunner, Timothy A.		ш						
93	347/260; 358/296		Porter, Vernon R. et al.		Ш						
94	250/201.4; 356/3.01		Метутап, Jerry D. et al.								
56	250/398		Loschner, Hans et al.								
96	250/398; 250/492.2		Owen, Geraint	П							
97	356/401		Bartelt, John L. et al.		ļ		ļ				
86	257/E21.211; 356/401; 716/19; 716/21		Kosugi, Masao								
99	125/13.01; 33/286; 348/95; 356/401; 356/73; 83/522.11		Zimring, Bruce								
100	348/87; 348/95; 356/401; 702/94		Meshman, Boris et al.								

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Transforming method for calibration data in wafer production apparatus, involves measuring difference between coordinates of first and second patterns to establish processing pattern alignment of production wafer	Method and apparatus for targetless wafer alignment 356/139.04	Apparatus for projecting a series of images onto dies of a semiconductor wafer	Apparatus for projecting a series of images onto dies of a semiconductor wafer	Title
	356/139.04	355/43	355/55	Current OR

		HICKMAN, C A et al.		
		Fredriksen, Thorbjoern R. et al.		125/13.01; 125/35; 348/126; 348/87; 348/95; 356/141.5; 356/400; 414/754; 700/172; 700/192
		Hershel, Ronald S. et al.		355/53; 355/55; 355/61; 102 356/139.07; 356/401; 359/629; 359/727
		Lee, Martin E.		125/35; 269/21; 355/43; 355/54; 356/139.04; 356/401; 359/730
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Methods for compensating for lens heating resulting □ US 6297877 B1 20011002 10 from wafer reflectance in micro-photolithography equipment		Tide
eating resulting olithography 355/77	15/301	Current OR

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1			Shirley, Paul et al.								US 20030046786 [
2	355/53; 355/55		355/53; Hickman, Craig								□ □ □ us 6297877 □